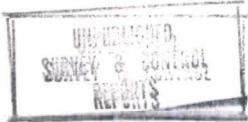


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U. S. DEPARTMENT OF AGRICULTURE - FOREST SERVICE
CALIFORNIA FOREST AND RANGE EXPERIMENT STATION
Division of Forest Insect Research



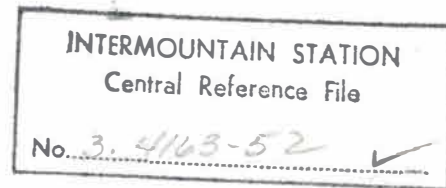
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Ethylene Dibromide Emulsion for Bark-Beetle Control

in Lodgepole Pine

Yosemite National Park, California

1956



Introduction

In connection with 1956 bark-beetle control work in Dingley Creek, Yosemite National Park, a water emulsion spray of ethylene dibromide (EDB) was tested for use against the mountain pine beetle, Dendroctonus monticolae Hopk., in lodgepole pine. Ethylene dibromide emulsion had been successfully used against similar insects elsewhere in the country; consequently favorable results were expected. Accordingly, plans were drawn up to test the application on 12 trees.^{1/} The remainder of the infested trees were given the regular fell-burn treatment.

The headwaters of the Tuolumne River, of which Dingley Creek is a part, opened late in 1956 following the heavy snows of the preceding winter. Spotting got under way on June 21, and treating a few days later. The control area was located some three miles north of Tuolumne Meadows; crews walked in and out each day and equipment and materials were carried in by pack animals.

Procedure

The test fell into three main phases--mixing the emulsifiable concentrate at the base camp at Tuolumne Meadows, preparing the finished spray near the treating site, and applying the spray. The emulsifiable concentrate was mixed as follows: 3 parts Triton X-100 and 5 parts Triton B-1956 were combined to form the emulsifier; then 3 parts of this emulsifier were combined with 5 parts 85% ethylene dibromide and 24 parts diesel oil (fuel oil) to form the emulsifiable concentrate.

The concentrate was put in 5-gallon cans and transported to the treating area. There the finished spray was prepared by mixing the concentrate with water at a 1:4 ratio--1 gallon of concentrate and 4 gallons of water. It was most convenient to use 5-gallon cans for mixing the spray.

The spray was then carried to the individual trees for application. Garden-type sprinkling cans were used to apply the spray. The trees, which had been felled and bucked into convenient lengths, were soaked on top until the spray just began running off the sides. Then the logs were rolled and drenched again. This was repeated until the entire log was covered. Several rollings were

^{1/} Stevens, Robert E. 1956. Study plan for testing an ethylene dibromide emulsion for control of the mountain pine beetle in lodgepole pine. CF&RES, Berkeley. (Processed)

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necessary to completely treat the larger logs. The spray on hand allowed for treating of 15 trees, rather than the 12 planned. Diameter at breast height of the test trees varied from 28 to 52 inches, and the infested length ran from 20 to 65 feet. Beetles were present as larvae and new adults. Spray requirements ran from 5 to 13 gallons per tree.

Results

Results were assessed by examining the brood in sprayed logs 2 weeks after spraying. No live insects could be found in 12 of the 15 logs treated. Only a few live insects were found in the remaining 3 trees, and the majority of these seemed to be unable to function normally.

Discussion

It is felt that the EDB spray was highly successful from a mortality standpoint. If reasonable care is taken in covering all the infested area, satisfactory kill should be obtained.

The test gave an indication that, because no time is spent building fireline and watching to make sure fires do not get out of hand, costs of control might be reduced using EDB rather than fell-burn techniques. Therefore, during the fall control work in September and October 1956, EDB was used exclusively. In addition to the reduced fire hazard, costs fell from an average of \$36.71 per tree for the summer work to \$18.32 for the fall work. Dosage averaged 6.5 gallons per tree. While other factors entered into this reduction in cost, Park foresters felt that the adoption of EDB spray as the control method was the primary reason.

Toward the end of the fall project, which finished on October 26, 1956, some difficulty was reported with the emulsifiable concentrate solidifying at temperatures around 40° F. However, when warmed and mixed with water to form the finished spray, the material seems to have given no further problems.

Berkeley, California
April 9, 1957

Robert E. Stevens
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